Enderby or Kemp Land, because he passed 130 or 180 miles to the south of them. Biscoe, who discovered them, was not able to approach within 30 miles of them, and therefore he did not give a very accurate account. One great reason why steam alone could not be used to any great extent in the Arctic regions was, that steamers could not carry provisions enough, as they would have to take such a large supply of coals. In the Arctic regions a pack was never in the same place two seasons running, and most probably it was the same in the Antarctic regions, for Balleny passed the preceding year over 30 or 40 miles of water where Wilkes and D'Urville found a perpendicular barrier of ice. With regard to crossing 60° S. in November in the year 1823, Scoresby reached the parallel of 81° N. in April: in 1813, 80° N. was reached in the beginning of the same month; in Davis's Straits, M'Clintock was able to get under weigh on the 18th of April, and in 1857 lat. 74° N. was reached May 21st in Davis's Straits. These facts showed that, as far as temperature was concerned, there was no difficulty in navigating the Arctic regions early in the year; and he did not see why the same rule should not apply to the southern pole.

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2. *On Greenland Fiords and Glaciers.* By J. W. TAYLER.

IN the 'Proceedings' issued July, 1869, which I received in October last, I see, in a Paper by Mr. R. Brown, that he has arrived at the conclusion that glaciers have "hollowed out" the fiords of the North: by hollowing, I take it for granted he means causing fiords to be where none were before—glacier the cause, fiord the effect. This extraordinary conclusion seems to have passed unquestioned, except by Mr. Whymper.

I have spent the greater part of the last 18 years in that home of glaciers, Greenland, exploring the fiords, but have never seen anything to lead to such a conclusion. I maintain that the reverse is the case—that instead of glaciers excavating fiords, they are continually filling them up. It is true that boulders and *débris*, borne along by the ice, scratch, polish, and grind the rocks to a considerable extent; but, though strong as a transporting agent, ice alone has but little excavating power: it is like the soft wheel of the lapidary—the hard matter it carries with it does the polishing. I hope to show that the power of ice in excavating has been much overrated.

I have described fiords in Greenland in a former Paper. Fiords in general are familiar things to many. I will merely remind my readers that those of Greenland are walled in by rocks averaging 1000 feet in height: their length varies from 10 to 100 miles; breadth 1 to 8 miles; depth of water from a few feet to 200 or more fathoms. The rocks on each side of these fiords are marked by ice-action at intervals, but more so near the glacier.

The deep fiords have, for the most part, glaciers launching icebergs; the shallow ones have not. Some of the largest glaciers are really

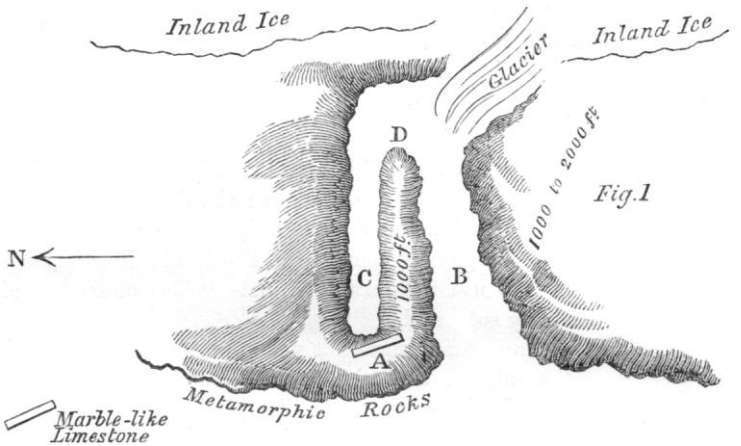
not in the fiords—witness the one north of Frederickshaab, 15 miles broad, which has not made a fiord and does not launch bergs; and for this reason—it has brought down a lot of loose material to a reefy coast and formed a beach at its base, and this great ice-power which we are asked to believe has excavated fiords in granitic rocks, 100 miles long and 3000 or 4000 feet in depth, is overcome by loose *débris* and sand. Why does it not cut its way through these, by far the easier task?

There are numerous fiords in Greenland nearly filled up by loose material brought into them by the glaciers; the first fiord south of the great glacier I before alluded to is only navigable in boats at high water. No icebergs now come out of this fiord; the glacier is, as a power (if I may use the term), extinct—it has choked itself up, it is mastered by soft mud.

The inland ice, from some cause not yet explained (but probably the weight of the interior and higher ice pressing on the lower), moves slowly towards the coast, more like pitch on a roof exposed to the sun than like a solid body forced forwards, and the glacier finds its way into the deep fiords, simply because they afford an easy outlet. The ice brings with it—below, loose rocks and stones, rounded into boulders, and much sand and mud produced by these in their passage over the rocks beneath;—on the surface, angular fragments, fallen upon the ice from the sides of mountains and fiord sides of the glacier. Almost all the lower transported material is pushed into the fiord, the mud floats away, most of the boulders and sand remain, and the first iceberg launched in the fiord commences the slow but certain checking of the glacier; for, as before shown, it has not power to remove its own loose material. The glacier blocked up, the edge of the ice retires inland by melting, and a stream of water brings down the sand and mud left on the land, making the fiord still shallower. The inland ice now seeks another outlet, and then a deep fiord, perhaps previously clear of ice, becomes encumbered in its turn with icebergs. The ruins of Scandinavian villages may be seen in fiords now almost inaccessible for icebergs, and at the heads of fiords now unnavigable in boats, from deposits from the glaciers.

The sides of many fiords are of soft material—sandstone, with coal, blacklead, &c. Why were these not ground away? And then the shape of some fiords is incompatible with the theory of ice-cutting, for ice could not cut in contrary directions. Take, for example, the fiord Fig. 1; it is the second south of Arksut. At the barrier A there is a large vein of crystalline limestone, some 20 feet broad, not in the slightest degree marked by ice. How could such

a fiord be cut by a glacier? Even if we grant it the power to cut the arm B, it will be hard to explain the arm C; on the same theory



The barrier at A is so high that the existence of the arm C was not suspected until turning the point D.

I maintain that the fiords were in existence prior to their invasion by glaciers. As to their origin, I think the geologist in Greenland will see in the immense number of erupted dykes and upheaval, distortion, and fracture of the older stratified rocks, a cause more adequate to the effect than ice "hollowing."

Alberton, Prince Edward Island,
November 4th, 1869.

ADDITIONAL NOTICES.

(Printed by order of Council.)

1. *Notes on the Climate and Geology of Abyssinia, with Table of Heights.* By H. Cook, M.D., Surgeon Bengal Army.

The climate of the low-lying strip of country skirting the mountainous region of Abyssinia proper, on the sea-board, differs from that of the Highlands extremely—differs, indeed, as much as if the countries themselves were severed by wide tracts of ocean or parallels of latitude; the climate of the one resembling in many points that of Scinde, that of the other more nearly approaching the climate of the Neilgherries.

The seasons of the two countries differ widely: those of the lowlands, like